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EXAMINER
DEMICCO, MATTHEW R

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

Office Action Summary	Application No. 09/490,761	Applicant(s) CROCKER ET AL.
	Examiner Matthew R Demicco	Art Unit 2697

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _24 January 2000_ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-66_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-7, 10-18, 20-27 and 29-66_ is/are rejected.

7)☒ Claim(s) _8, 9, 19 and 28_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _24 January 2000_ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _2_ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1.   The drawings are objected to because in Figure 8, the numeral "834" is used for both a Media Access Controller and a Network Layer. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2.   The disclosure is objected to because of the following informalities: There is no description of Figure 1 in the Specification. Further, in Figure 2, there is no description in the Specification for the following elements: 251, 215b, 217, 215c, 215a, 215d, 202, 227, 252a and 252b. Similarly, in Figure 4, elements 407 and 409 are not disclosed. Also, in Figure 6, element 602 is not disclosed. Similarly in Figure 7A, 765 and 775 do not appear in the Specification. Also, in Figure 7B, 252 does not appear. Appropriate correction is required.

Claim Objections

3.   Claim 32 is objected to because of the following informalities: "claims 29" should be corrected to read --claim 29--. Appropriate correction is required.

4.   Claim 37 is objected to because of the following informalities: "lest" should be corrected to read --least--. Appropriate correction is required.

5.   Claim 48 is object to because it appears to be incomplete, ending with "; and" instead of a period. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7.   Claims 3 and 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite

for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. The Applicant claims that, "…the access network is a wireless

network." The Examiner found no support for these claims in the Specification and therefore

rejects them on the grounds of insufficient antecedent basis.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 1-4, 6-7, 10-18, 20-25, 29-30, 32-39, 42-54 and 56-66 are rejected under 35

U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of U.S. Patent

No. 6,370,159 to Eidson.

Regarding Claim 1, Applicant's admitted prior art (See Figure 2) discloses an

access network comprising a Head End (210) and a plurality of nodes (261, 262), the

Head End including an access control system (206, 208) having a plurality of media

access controllers, each controlling a respective interface to the access network (212, 205,

222, 225), the plurality of controllers including a first distinct access controller (202) for

controlling a first interface including a first time reference device (206), the first interface

including a first distinct plurality of ports (212, 205) for communicating with at least a

first portion of the plurality of nodes (261), the plurality of access controllers further

including a second distinct access controller (204) for controlling a second interface

including a second time reference device (208), the second interface including a second

distinct plurality of ports (222, 225) for communicating with at least a second portion of

the plurality of nodes (262). What is not disclosed, however, is a method for

synchronizing these time reference devices in the access network, the method comprising

providing at least one synchronization signal to the first and second access controllers

and utilizing the signal at the first and second controllers in a manner which results in

both time reference devices being in synchronization with each other. Eidson discloses a

method for synchronizing time reference devices in an access network (Col. 2, Lines 21-

26) where at least one synchronization signal (Col. 2, Lines 48-52) is provided to a first

and second access controller (Col. 2, Lines 6-26) and the signal is utilized at the first and

second access controllers in such a manner that the first and second time reference

devices are in synchronization with each other (Col. 2, Lines 21-26). The method of

Eidson further discloses an access network (See Figure 1, 12) wherein the media access

controllers (20, 21) include time reference devices (See Figure 2, 162). The method of

Eidson discloses the implementation of a network using the TDMA protocol (Col. 3, Line

1), which is the same as the prior art cable modem system disclosed by Applicant. Eidson

is evidence that ordinary workers in the art would understand the benefits of providing a

synchronization signal and synchronizing multiple access controllers in the Head End of

a TDMA network. Therefore, it would have been obvious to one having ordinary skill in

the art at the time the invention was made to modify the system of Applicant's admitted

prior art with the method of synchronization of Eidson in order to implement

redundancy/fail-over and increase timing accuracy/reduce signal overlap in a TDMA

network.

Regarding Claim 2, Applicant's admitted prior art in view of Eidson disclose a

method as stated above in Claim 1. Further, the prior art discloses the first access

controller and first interface reside on a first physical line card within the access control

system (202), and the second access controller and second interface reside on a second

physical line card within the access control system (204).

Regarding Claim 3, as best understood by the Examiner, Applicant's admitted

prior art in view of Eidson disclose a method as stated above in Claim 1. It is inherent

that the TDMA network of the prior art and the system of Eidson could be a wireless

network as is well known in the art.

Regarding Claim 4, Applicant's admitted prior art in view of Eidson disclose a

method as stated above in Claim 1. Further, the prior art discloses that the access network

is a cable network, the nodes are cable modems (261), and the access control system is a

Cable Modem Termination System (210).

Regarding Claim 6, Applicant's admitted prior art in view of Eidson disclose a

method as stated above in Claim 1. Eidson further discloses generating at least one

synchronization signal from a synchronization device (Col. 2, Lines 48-52) where the

signal includes time reference data (GPS time, radio broadcast time, or atomic clock) to be used to synchronize each of the plurality of access controllers in the system as stated above.

Regarding Claim 7, Applicant's admitted prior art in view of Eidson disclose a method as stated above in Claim 1. Eidson further discloses a method wherein the synchronization signal is provided at periodic intervals to the first and second access controllers (Col. 3, Lines 3-6).

Regarding Claim 10, Applicant's admitted prior art in view of Eidson disclose a method as stated above in Claim 1. Eidson further discloses providing time reference data to each of the plurality of access controllers as stated above in Claim 6, and simultaneously loading (Col. 2, Lines 21-26), at each of the controllers, the time reference data into its respective time reference device (See Figure 1, Slave Clock) to thereby cause each of the time reference devices to be synchronized with each other. Referring to Figure 1, all time reference devices are connected to the master clock in parallel by network 12, thereby enabling them to synchronize data simultaneously.

Regarding Claim 11, Applicant's admitted prior art in view of Eidson disclose a method as stated above in Claim 10. Eidson further discloses asserting a "timing event" packet via the network to the slave time reference devices (Col. 6, Lines 25-30). This signal causes the slave devices to latch a subsequent data packet containing a traceable time value. The timing event packet reads on the claimed DATA_VALID signal and the latching of timing event data reads on the loading of the time reference data within an

internal memory device. It is inherent that the timing event signal must be de-asserted such that it can be re-asserted at a later time to initiate another synchronization event.

Regarding Claim 12, Applicant's admitted prior art in view of Eidson disclose a method as stated above in Claim 11. Eidson further discloses providing a data packet containing a traceable time value after the timing event packet as stated above in Claim 11. This data packet reads on the claimed LOAD_DATA signal as it causes each access controller to simultaneously load the time reference data from its internal memory into its time reference device (Col. 6, Lines 30-39).

Regarding Claim 13, Applicant's admitted prior art in view of Eidson disclose a method as stated above in Claim 11. Eidson further discloses that the loading process includes each access controller automatically loading the time reference data from its internal memory device (latch) into its time reference device (adjustable clock) after the DATA_VALID signal (timing event) has been de-asserted. It is inherent that this must happen at a predefined time, as all data transfers across a data bus between memory devices must happen at predefined times or clock cycles.

Regarding Claim 14, Applicant's admitted prior art in view of Eidson disclose a method as stated above in Claim 2. Applicant's admitted prior art discloses a cable modem system with a Head End and a plurality of network nodes. It is inherent in such a cable modem system that time reference synchronization messages must be provided to the nodes from the Head End due to the TDMA protocol implementation of the network.

Regarding Claim 15, Applicant's admitted prior art in view of Eidson disclose a method as stated above in Claim 14. It is further inherent that a first group of nodes may

belong to a first DOCSIS domain and a second plurality of nodes may belong to a second

DOCSIS domain in a cable modem system as disclosed by Applicant's admitted prior art.

Regarding Claim 16, Applicant's admitted prior art in view of Eidson disclose a

method of configuring an access network, the access network comprising a Head End and

a plurality of nodes, the Head End including an access control system having a plurality

of media access controllers, each of the plurality of media access controllers controlling a

respective interface to the access network, each of the plurality of controllers including a

distinct time reference device and a plurality of ports for communicating with at least a

portion of the nodes as stated above in Claim 1. Further disclosed is the synchronization

of the time reference devices in each of the plurality of access controllers. The

Applicant's admitted prior art discloses assigning selected ports from the plurality of

interfaces to particular domains within the network. Referring to Figure 2, ports 212 and

205 are assigned to Group A and ports 222 and 225 are assigned to Group B.

Regarding Claim 17, Applicant's admitted prior art in view of Eidson disclose a

method as stated above in Claim 16. It is inherent in such a cable modem system that

client devices communicate with the Internet using a protocol such as TCP/IP. Further, it

is well known that the client devices are assigned to a designated Internet domain.

Therefore, clients associated with at least one port from a first interface may be assigned

to a given Internet domain, and clients assigned to at least one port from a second

interface may be assigned to the same given Internet domain. This reads on the claimed at

least one port from a first interface is assigned to a first domain and assigning at least one

port from a second interface to the first domain.

Regarding Claim 18, Applicant's admitted prior art in view of Eidson disclose a method as stated above in Claim 17. Applicant's admitted prior art discloses that the access network is a cable network, the plurality of nodes are cable modems, and the access control system is a Cable Modem Terminal System as stated above in Claim 4.

Regarding Claim 20, Applicant's admitted prior art in view of Eidson disclose a method as stated above in Claim 17. Applicant's admitted prior art discloses that the first interface (212) resides on a first physical line card (202) within the access control system, and the second interface (222) resides on a second physical line card (204) within the system.

Regarding Claim 21, Applicant's admitted prior art in view of Eidson disclose a method as stated above in Claim 17. The Applicant's admitted prior art discloses a system where the first domain (Group A) includes one downstream channel (212). It is inherent in such a system that the line card could have multiple downstream channels, just as it has multiple upstream channels (205).

Regarding Claim 22, Applicant's admitted prior art in view of Eidson disclose a method as stated above in Claim 17. The Applicant's admitted prior art discloses a system where the first domain (Group A) includes a plurality of ports (212, 205) including downstream transmitter (212). It is inherent that there could be multiple downstream transmitters in a single line card, just as there are two or more upstream receivers (205).

Regarding Claim 23, Applicant's admitted prior art in view of Eidson disclose a method for synchronizing nodes in an access network to a common time reference, the

access network comprising a Head End and a plurality of nodes, the Head End including

an access control system having a plurality of media access controllers, each of the

plurality of media access controllers controlling a respective interface to the access

network and including a distinct time reference device and a distinct plurality of ports for

communicating with at least a portion of the plurality of nodes as stated above in Claims

1 and 16. Further disclosed is providing a first time reference message to a first node via

a first downstream channel as stated above in Claim 8, the first downstream channel

being associated with a first media access controller and a first interface (See Figure 2),

the first time reference message being generated from a first time reference device

associated with the first media access controller as stated above in Claim 8. Further, a

second time reference message is provided to a second node (262) via a second

downstream channel (222), the second downstream channel being associated with a

second media access controller (204) and a second interface (222), the second time

reference message being generated from a second time reference device associated with a

second media access controller as stated above. The first and second time reference

devices are synchronized with each other as stated above in Claim 1. It is inherent, then,

in a system that synchronizes a first node from a first time reference device and a second

node from a second time reference device, wherein the time reference devices are

synchronized, that the first and second nodes are synchronized with each other. This

reads on the claimed synchronizing the first and second nodes by using the first time

reference message to synchronize a time reference device of the first node with the first

time reference device and using the second time reference message to synchronize a

second time reference device of the second node with the second time reference device.

Regarding Claim 24, Applicant's admitted prior art in view of Eidson disclose a

method as stated above in Claim 23. Applicant's admitted prior art further discloses that

the first access controller (206) and first interface (212) reside on a first physical line card

(202) within the access control system, and the second access controller (208) and second

interface (222) reside on a second physical line card (204) within the access control

system.

Regarding Claim 25, Applicant's admitted prior art in view of Eidson disclose a

method as stated above in Claim 23. Further, the prior art discloses that the access

network is a cable network, the nodes are cable modems (CM), and the access control

system is a Cable Modem Termination System (210) as stated above in Claim 4.

Regarding Claim 29, Applicant's admitted prior art discloses a Head End of an

access network (210), the access network comprising a plurality of nodes (261, 262), the

Head End comprising a plurality of physically distinct network interfaces to the access

network (212, 205, 222, 225), each network interface comprising a group of distinct ports

to nodes on the access network. What is not disclosed, however, is a master time

reference device which maintains and updates a current time reference or a slave time

reference device in communication with the master time reference device, thereby

allowing each network interface to obtain the current time reference at the same time so

that the plurality of network interfaces are in synchronization. Eidson discloses a method

for synchronizing time reference devices in an access network (Col. 2, Lines 21-26)

where at least one synchronization signal (Col. 2, Lines 48-52) is provided to a first and second access controller (Col. 2, Lines 6-26) and the signal is utilized at the first and second access controllers in such a manner that the first and second time reference devices are in synchronization with each other (Col. 2, Lines 21-26). Eidson also discloses a master time reference device (See Figure 1), which maintains and updates a current time reference. The method of Eidson further discloses an access network (See Figure 1, 12) wherein the media access controllers (20, 21) include time reference devices (See Figure 2, 162). The method of Eidson discloses the implementation of a network using the TDMA protocol (Col. 3, Line 1), which is the same as the prior art cable modem system disclosed by Applicant. A plurality of slave time reference devices are disclosed (See Figure 1) that are in communication with the master time reference device, thereby allowing each network interface to obtain the current time reference at the same time over the parallel network (12) so that the plurality of network interfaces are in synchronization. Eidson is evidence that ordinary workers in the art would understand the benefits of providing a synchronization signal and synchronizing multiple access controllers in the Head End of a TDMA network. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Applicant's admitted prior art with the method of synchronization of Eidson in order to implement redundancy/fail-over and increase timing accuracy/reduce signal overlap in a TDMA network.

Regarding Claim 30, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 29. Further disclosed is a Head End wherein the access

network is a cable network, the plurality of nodes are cable modems, and wherein the Head End is a Cable Modem Termination System as stated above in Claim 25.

Regarding Claim 32, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 29. Applicant's admitted prior art further discloses the plurality of network interfaces includes a first network interface (212) residing on a first physical line card (202) and a second network interface (222) residing on a second physical line card (204).

Regarding Claim 33, Applicant's admitted prior art in view of Eidson disclose a Head End of an access network, the access network comprising a plurality of nodes, the Head End comprising a master time reference device which maintains and updates a current time reference as stated above in Claim 29. Further, Eidson discloses a plurality of slave media access controllers in communication with the master time reference device (See Figure 1) as stated above. Each of the slave media access controllers (60-62) are responsive to control signals (Col. 6, Lines 24-39) from the master time reference device to use the current time reference to synchronize itself with other slave media access controllers in the Head End as stated above.

Regarding Claim 34, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 33. Eidson further discloses that each of the plurality of slave media access controllers includes a respective slave time reference device (See Figure 1). Each of the slave media access controllers is responsive to control signals from the master time reference device (Col. 6, Lines 24-39) to use the current time reference to synchronize its respective slave time reference devices in the Head End as stated above.

Regarding Claim 35, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 33. Applicant's admitted prior art further teaches a master media access controller (206), which includes the master time reference device. Eidson also teaches this in Figure 1 (18).

Regarding Claim 36, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 33. The admitted prior art further discloses that each of the plurality of slave media access controllers (208) controls a respective interface to the access network (222, 225), each network interface including a distinct plurality of ports for communicating with at least a portion of the plurality of nodes (262). The network interfaces are in synchronization with each other as stated above.

Regarding Claim 37, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 36. It is inherent in such a cable modem system that users surfing the Internet could download video content over the network. This reads on the plurality of network interfaces including a first portion of interfaces which each include at least one downstream channel for providing video content. Further, it is well known in the art that cable modems co-exist with traditional television broadcasting, sharing channels on the same network.

Regarding Claim 38, as best understood by the Examiner, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 33. It is inherent that the TDMA network of the prior art and the system of Eidson could be a wireless network as is well known in the art.

Regarding Claim 39, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 33. The prior art further discloses the network is a cable network, the plurality of nodes are cable modems, and the Head End is a Cable Modem termination system as stated above (See Figure 2).

Regarding Claim 42, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 36. The prior art further discloses a first media access controller (206) and a respective first interface (212) reside on a first physical line card (202) and wherein a second media access controller (208) and a second respective interface (222) reside on a second physical line card.

Regarding Claim 43, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 42. The prior art further discloses the first interface including a first plurality of ports (212, 205) and wherein the first plurality of ports includes a first downstream channel transmitter (212). It is inherent that the interface could include a second downstream transmitter, just as it could include multiple upstream receivers (205).

Regarding Claim 44, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 43. It is inherent in such a cable modem system that client devices communicate with the Internet using a protocol such as TCP/IP. Further, it is well known that the client devices are assigned to a designated Internet domain. Therefore, clients associated with a first downstream channel corresponding to the first downstream channel transmitter may be assigned to a given Internet domain, and clients

assigned to a second downstream channel corresponding to a second downstream channel transmitter may be assigned to the same given Internet domain.

Regarding Claim 45, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 42. The prior art discloses a first interface including a first plurality of ports (212, 205) including at least one first downstream channel transmitter (212). The second interface includes a second plurality of ports (222, 225), including at least a second downstream channel transmitter (222). It is inherent in such a TDMA cable modem system that the first downstream channel transmitter is configured to provide a first time reference message to a first portion of the network nodes (cable modems). Too, it is inherent that the second downstream transmitter is configured to provide a second time reference message to a second portion of the network nodes. The first and second time reference messages are derived from different media access controllers (206, 208), which are in time synchronization as stated above in Claim 1.

Regarding Claim 46, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 45. It is inherent in such a cable modem system that client devices communicate with the Internet using a protocol such as TCP/IP. Further, it is well known that the client devices are assigned to a designated Internet domain. Therefore, clients associated with at least one port from a first interface may be assigned to a given Internet domain, and clients assigned to at least one port from a second interface may be assigned to the same given Internet domain. This reads on the claimed system wherein the first and second plurality of ports each belong to the same domain.

Regarding Claim 47, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 43. It is inherent in such a cable modem system that client devices communicate with the Internet using a protocol such as TCP/IP. Further, it is well known that the client devices are assigned to a designated Internet domain. Therefore, clients associated with at least one port from a first interface may be assigned to a given Internet domain, and clients assigned to at least one port from a second interface may be assigned to a different Internet domain. This reads on the claimed system wherein the first and second plurality of ports each belong to a different domain.

Regarding Claim 48, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 33. Eidson further discloses the master time reference device asserts a "timing event" packet via the network to the slave time reference devices (Col. 6, Lines 25-30). This signal causes the slave devices to latch a subsequent data packet containing a traceable time value. The timing event packet reads on the claimed DATA_VALID output line for indicating transmission of valid data to each slave controller. Eidson further discloses providing a data packet containing a traceable time value after the timing event packet as stated above in Claim 11. This data packet reads on the claimed DATA line as it provides data to each slave access controller.

Regarding Claim 49, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 48. Eidson further discloses the master timer reference device including a data packet containing a traceable time value after the timing event packet as stated above in Claim 11. This data packet reads on the claimed LOAD_DATA

signal as it causes each access controller to simultaneously load the time reference data

from its internal memory into its time reference device (Col. 6, Lines 30-39).

Regarding Claim 50, Applicant's admitted prior art in view of Eidson disclose a

system as stated above in Claim 48. As stated above in Claims 48 and 49, the master time

reference device utilizes communication lines between the slave devices in order to pass

signals. The slave time reference devices must inherently have these lines for receiving

the data from the master. This reads on the claimed slave media access controllers

including a DATA_VALID input line for receiving the signal from the master time

reference device and a DATA input line for receiving the data. In the system of Eidson,

the communication lines may be Ethernet (Col. 2, Line 63) or any other appropriate serial

or network connection that is well known in the art.

Regarding Claim 51, Applicant's admitted prior art in view of Eidson disclose a

system as stated above in Claim 50. Eidson discloses each slave media access controller

"latching" the transmitted time reference data received from the master time reference

device as stated above in claim 11. This reads on a holding register for storing time

reference data.

Regarding Claim 52, Applicant's admitted prior art in view of Eidson disclose a

system as stated above in Claim 50. Eidson further discloses that each access controller is

configured to load time reference data received on the data input line into the holding

register (latch) as stated above. Further, Eidson discloses loading the time reference data

from the holding register into the slave time reference device upon an occurrence of an

event (Col. 6, Lines 24-38). The event is the timing data packet as disclosed by Eidson.

Regarding Claim 53, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 52. Eidson further discloses that each master time reference device transmits a LOAD_DATA signal (timing event) as stated above. This signal must be carried on an output line, such as the network of Eidson. Further, each slave media access controller must inherently include an input line for this signal as stated above. The claimed event is an assertion of a DATA_LOAD (timing event) signal at the master time reference device (Col. 6, Lines 24-38).

Regarding Claim 54, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 52. Eidson further discloses asserting a "timing event" packet via the network to the slave time reference devices (Col. 6, Lines 25-30). This signal causes the slave devices to latch a subsequent data packet containing a traceable time value. The timing event packet reads on the claimed DATA_VALID signal and the latching of timing event data reads on the loading of the time reference data within an internal memory device. It is inherent that the timing event signal must be de-asserted such that it can be re-asserted at a later time to initiate another synchronization event.

Regarding Claim 56, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 34. Eidson further discloses a counter driven by an oscillator is used to keep time (Col. 2, Lines 32-42). This reads on the claimed timestamp counter of the master and slave time reference devices.

Regarding Claim 57, Applicant's admitted prior art in view of Eidson disclose a system as stated above in Claim 33. Eidson further discloses that the master time reference device in the Head End includes a clock signal derived from a network source

such as the well-known Network Time Protocol (NTP) (Col. 8, Lines 8-13). The clock

signal is provided to the master time reference device and each of the slave media access

controllers as disclosed.

Regarding Claim 58, Applicant's admitted prior art in view of Eidson disclose a

system as stated above in Claim 57. It is inherent that the NTP server that the master time

reference device could be configured to get its updates from a stratum clock source, that

is, a primary NTP server that has reference clock attached to it and receives updates via

radio from an official time transmitter.

Regarding Claim 59, Applicant's admitted prior art in view of Eidson disclose a

method for synchronizing interfaces of an access network, the access network comprising

a Head End and a plurality of nodes, the Head End including an access control system

having a plurality of slave media access controllers, each slave controlling a respective

interface to the access network and including a first distinct access controller for

controlling a first interface, the first controller controlling a first time reference device

and including a first distinct plurality of ports for communicating with at least a first

portion of the plurality of nodes, the plurality of access controllers further including a

second distinct access controller for controlling a second interface, the second controller

including a second time reference device, the second interface including a second distinct

plurality of ports for communicating with at least a second portion of the plurality of

nodes as stated above. It is inherent that a computer program must be used to operate

such a computer-based system, and therefore a computer useable medium having

computer readable code embodied therein is required. Further disclosed is providing at

least one synchronization signal to the first and second access controllers, and utilizing

the signal at the first and second access controllers in a manner that results in the first and

second time reference devices being in synchronization with each other as stated above.

Regarding Claim 60, Applicant's admitted prior art in view of Eidson disclose a

computer program as stated above in Claim 59. Further disclosed is that the access

network is a cable network, the plurality of nodes are cable modems, and the access

control system is a Cable Modem Termination System as stated above.

Regarding Claim 61, Applicant's admitted prior art in view of Eidson disclose a

computer program as stated above in Claim 59. Further disclosed is providing time

reference data to each of the plurality of access controllers and loading, at each controller,

the time reference data into a respective time reference device thereby causing each of the

devices to be synchronized with each other as stated above.

Regarding Claim 62, Applicant's admitted prior art in view of Eidson disclose a

method for configuring an access network, the access network comprising a Head End

and a plurality of nodes, the Head End including an access control system having a

plurality of slave media access controllers, each of the controllers controlling a respective

interface to the access network, each of the slave media access controllers including a

distinct time reference device, each interface including a plurality of distinct ports for

communicating with at least a portion of the plurality of nodes as stated above. It is

inherent that a computer program must be used to operate such a computer-based system,

and therefore a computer useable medium having computer readable code embodied

therein is required. Further disclosed is synchronizing the time reference devices in each

of the plurality of access controllers and assigning selected ports from the plurality of

interfaces to particular domains within the access network as stated above.

Regarding Claim 63, Applicant's admitted prior art in view of Eidson disclose a

computer program as stated above in Claim 62. Further disclosed is assigning at least one

port from a first interface to a first domain and assigning at least one port from a second

interface to the first domain as stated above.

Regarding Claim 64, Applicant's admitted prior art in view of Eidson disclose a

computer program as stated above in Claim 63. Further disclosed is that the access

network is a cable network, the plurality of nodes are cable modems, and the access

control system is a Cable Modem Termination System as stated above.

Regarding Claim 65, Applicant's admitted prior art in view of Eidson disclose a

method for synchronizing nodes in an access network to a common time reference, the

access network comprising a Head End and a plurality of nodes, the Head End including

an access control system having a plurality of slave media access controllers, each

controlling a respective interface to the access network, and each including a distinct time

reference device, each interface including a plurality of distinct ports for communicating

with at least a portion of the plurality of nodes as stated above. It is inherent that a

computer program must be used to operate such a computer-based system, and therefore

a computer useable medium having computer readable code embodied therein is required.

Further disclosed is providing a first time reference message to a first node via a first

downstream channel, the first channel being associated with a first slave media access

controller and a first interface, the first reference message being generated from a first

time reference device associated with the first media access controller as stated above. Also disclosed is providing a second time reference message to a second node via a second downstream channel, the second channel being associated with a second slave media access controller and a second interface, the second time reference message being generated from a second time reference device associated with the second slave media access controller, wherein the first and second time reference devices are synchronized with each other as stated above. Also disclosed is synchronizing the first and second nodes by using a first time reference message to synchronize a time reference device of the first node with the first time reference device and using a second time reference message to synchronize a second time reference device of the second node as stated above.

Regarding Claim 66, Applicant's admitted prior art in view of Eidson disclose a computer program as stated above in Claim 65. Further disclosed is that the access network is a cable network, the plurality of nodes are cable modems, and wherein the access control system is a Cable Modem Termination System as stated above.

10.   Claims 5 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view Eidson and further in view of well-known prior art.

Regarding Claims 5 and 26, Applicant's admitted prior art in view of Eidson disclose a method as stated above in Claims 1 and 25. The Applicant's admitted prior art further discloses that the first and second access controllers are Media Access Control devices (206, 208) residing on different physical line cards (202, 204). What is not

disclosed, however, is that the first and second access controllers are configured to operate in accordance with the DOCSIS standard. Official Notice is hereby taken that it was well known in the art at the time the invention was made to use the DOCSIS standard in such a cable modem system as is disclosed by the Applicant. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the method of Applicant's admitted prior art in view of Eidson with the DOCSIS standard of the well-known prior art in order to make the cable modem system compatible with a wide variety of 3rd party hardware devices.

Regarding Claim 27, Applicant's admitted prior art in view of Eidson and further in view of the well-known prior art disclose a method as stated above in Claim 26. Applicant's admitted prior art further discloses that the first node is a cable modem (261) belonging to a first DOCSIS domain and the second node is a cable modem (262) belonging to a second DOCSIS domain as stated above in Claim 15.

11.   Claims 31, 40-41 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view Eidson and further in view of U.S. Patent No. 5,751,220 to Ghaffari.

Regarding Claims 31 and 40, Applicant's admitted prior art in view of Eidson disclose a device as stated above in Claims 29 and 33. What is not disclosed, however, is including a back-up time reference device for maintaining and updating the current time reference, and for providing the current time reference to each of the slave time reference devices at times when a failure is detected at the master device. Ghaffari discloses a

network of electronic devices (See Figure 6A) that are time-synchronized to a master unit

(56M-1), which transmits a synchronization signal (Col. 9, Lines 20-27). Ghaffari also

discloses a back-up time reference device (56M) for maintaining and updating the current

time reference and providing the current time reference to each of the slave time

reference devices (56S) at times when a failure is detected at the master device (Cols. 9-

10, Lines 66-2). Ghaffari is evidence that ordinary workers in the art would understand

the benefits of having a backup time synchronization device in a system where

synchronization is essential to the proper operation of the network. Therefore, it would

have been obvious to one having ordinary skill in the art at the time the invention was

made to further modify the system of the Applicant's admitted prior art in view of Eidson

with the back-up time reference device of Ghaffari in order to provide redundancy in the

event of a failure such that the network would be able to continue operating normally.

Regarding Claim 41, Applicant's admitter prior art in view of Eidson and further

in view of Ghaffari disclose a system as stated above in Claim 40. Ghaffari also discloses

that the back-up master time reference device is configured as part of a slave media

access controller. In the system of Ghaffari, each slave is part of a daisy chain starting

with the master. As each master fails, the next slave in the chain assumes its role (Cols. 9-

10, Lines 66-15).

Regarding Claim 55, Applicant's admitter prior art in view of Eidson and further

in view of Ghaffari disclose a system as stated above in Claim 40. Ghaffari further

discloses a system wherein the master time reference device includes at least one output

status line for communicating an operating status of the master device to the back up

devices (Col. 11, Lines 42-59).

Allowable Subject Matter

12.   Claims 8-9, 19 and 28 are objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the base

claim and any intervening claims.

Regarding Claims 8-9, the Examiner found no prior art, nor motivation to

combine said prior art, that teaches a method of synchronizing time reference devices in

the Head End of an access network with a plurality of distinct physical line cards and

time reference devices, a synchronization signal to time-synchronize each device with

each other, a first downstream channel transmitter and at least one first upstream receiver,

and a second downstream channel transmitter and receiver, wherein a first time reference

message is provided to a first node on the first downstream channel associated with the

first time reference device and data is received from the first node at the head end via the

second upstream channel including all subsequent limitations.

Regarding Claim 19, the Examiner found no prior art, nor motivation to combine

said prior art, that teaches a method of configuring an access network comprising a Head

End and a plurality of nodes, including an access control system having a plurality of

media access controllers with respective interfaces to the network, each including a

distinct time reference device and a distinct plurality of ports for communicating with a

plurality of nodes, comprising synchronizing the time reference devices in each of the

controllers, assigning selected ports from the interfaces to particular domains where at least one port from a first interface is assigned to a first domain, and where at least one port from a second interface is assigned to the first domain in a cable modem network where the domains are DOCSIS domains.

Regarding Claim 28, the Examiner found no prior art, nor motivation to combine said prior art, that teaches a method of synchronizing nodes in an access network to a common time reference wherein a first node is provided with a first time reference message via a first downstream channel associated with a first media access controller, and a second node is provided with a second time reference message via a second downstream channel associated with a second media access controller, and wherein the nodes are synchronized together in a cable modem network across different physical line cards using the DOCSIS standard and wherein the first and second nodes are cable modems belonging to a first DOCSIS domain.

Conclusion

13.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a.   U.S. Patent No. 5,854,793 to Dinkins discloses a two-way communication network with a central transmitter station and a synchronization unit that synchronizes the transmission facilities with a clock signal.

b.   U.S. Patent No. 5,790,806 to Koperda discloses a cable data network with a master head-end and multiple distribution hubs.

c.   U.S. Patent No. 5,384,563 to Massey discloses a second network being time-

synchronized to a first network with primary and backup controllers.

d.   The Data Over Cable Service Interface Specification SP-RFI-I04-980724

discloses a standard in cable modem technology.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Matthew R Demicco whose telephone number is (703) 305-8155.

The examiner can normally be reached on Mon-Fri, 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Andrew Faile can be reached on (703) 305-4380. The fax phone numbers for the

organization where this application or proceeding is assigned are (703 308-5359 for regular

communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is (703) 306-0377.

mrd
June 16, 2003

Kimberly A. Williams
Primary Examiner
Technology Center 2600